

## Air Emissions

## Printer Worksheet - Summary (Offset Lithography)

Date: **11/6/2002**

Company Name: **ABC Company**

Facility Name: **West Branch**

### Emission Summary

	Particulate Material PM10	Volatile Organic Compounds VOCs	Sulfur Dioxide SO2	Nitrogen Oxides NOx	Carbon Monoxide CO
Ink Emission		0.07			
Coatings		1.21			
Fountain Solutions		3.10			
Wash Solutions		3.30			
Stand-by Generator					
<b>Total Tons/Year</b>	<b>0.00</b>	<b>7.69</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

### Basic Instructions

These calculation sheets use Microsoft Excel, so you will need the Microsoft Excel program to use these spread sheets.

Typing in the cell can **delete** everything in the cell; number or text or equation, it is good practice to create a master sheet and then copy/rename a working file.

- Step 1 Fill in the company, facility name and identifying information in the shaded boxes. The information will be copied to the attached sheets (Tabs).
- Step 2 The emissions for the ink emissions, coatings, fountain solutions, and wash solutions are calculated from the **attached sheets** (the tabs at the bottom of this page), Ink Emissions, Coatings, Fountain and Wash Solutions. You enter the information on the attached sheets and the emission results for VOCs are copied by the program to this front page. Do not forget to attach all the calculation sheets to the summary when submitting the emission estimate for permitting. Also remember to include the hazardous air pollutant (HAPs) calculation. If you have other emission points add the equipment to this table, and attach the calculation. The text on the attached sheets details the calculations, the Excel program will do the calculation for you, the details are included as an explanation of how the calculation is performed so you could do the calculation manually.
- Step 3 If you have other equipment with emissions you need to calculate these emissions and add them to this sheet.
- Step 4 When you have completed all the calculations for all the emission points at the business, print out all the sheets and attach them to your submittal.  
Note: To print the whole workbook, chose the **'entire workbook'** button on the 'print what' box.

## Air Emissions

## Printer Worksheet - Ink

Date: **11/6/2002**

Company Name: **ABC Company**

Facility Name: **West Branch**

### Ink Emissions - Volatile Organic Compounds (VOCs)

Ink (A)	Press Type: Non-Heatset or Heatset (B)	Release Factor (C)	Volatile Organic Compound Content Fraction(15%=0.15) (D)	Pounds per Year (E)	Emissions (lbs/year) (F)
Black	Heatset	80%	0.15	1000	120.00
Red	NonHeatset	5%	0.25	2000	25.00
<b>Total VOC Emissions in Pounds/Year</b>				Box X	<b>145.00</b>
<b>Total VOC Emissions in Tons/Year</b>				Box Y	<b>0.07</b>

- Step 1 Categorize your ink usage in Column A of the table.  
Note: Your product supplier may have a program that estimates volatile organic compounds (VOCs) in his products, so check with him to see if he does, filling out these tables will be easier. If you use supplier numbers make sure they include the release factor.
- Step 2 Enter the press type, Non-Heatset or Heatset, in Column B. Click on the box and then the down arrow to display the choices. The press type determines the release factor in Column C, the release factor is automatically assigned by the program after the press type is chosen. For non-heatset printing the release factor is 0.05, for heatset printing the release factor is 0.80. The release factor will automatically be input on to the sheet after you enter the press type. The release factors comes from the EPA document : Control Techniques Guideline for Offset Lithography, November 1993.
- Step 3 From the Material Safety Data Sheet (MSDS) input the volatile organic content (VOC) in percent by weight. Enter the fraction, 0.15 or 0.35, Column C.
- Step 4 Estimate the pounds per year of products that you use on an annual basis in Column E. This can be estimated by recording what you use in an average month and then multiplying by 12 to convert to an annual basis.
- Step 5 Emissions are equal to the Release Factor times the fraction of VOCs per pound times the Pounds per year,  $F = C \times D \times E$ , enter the number in Column F.
- Step 6 Add all the results in column F for a total in Box X. Divide the total in Box X by 2000 to convert pounds to tons per year,  $Y = X/2000$ , enter number in Box Y.  
The totals will automatically be copied to the front sheet, Emissions Summary.

Do not include exempt VOC's like Methylene Chloride, 1,1,1-Trichloroethane, Acetone, or Methyl Acetate. See the definition of "Volatile Organic Compound (VOC)" as defined in 40 CFR Subsection 51.100(s)(1).

Remember volatile organic compounds are often hazardous air pollutants, so include an estimate of the hazardous air pollutants in the ink used at the business.

## Air Emissions

## Printer Worksheet - Coatings

Date: **11/6/2002**

Company Name: **ABC Company**

Facility Name: **West Branch**

### Coatings Emissions - Volatile Organic Compounds (VOCs)

Coatings (A)	Release Factor (B)	Pounds or Gallons Per Year (C)		Volatile Organic Compounds Fraction(15%=0.15) or lbs-VOC/gal (D)	Emissions Lbs-VOC Per Year (E)
Varnishes	5%	200	Pounds	0.35	3.5
UV	100%	250	Gallons	8.5	2125
Water-Based	100%	150	Gallons	2	300
<b>Total VOC Emissions in Lbs/Year</b>				Box X	2428.5
<b>Total VOC Emissions in Tons/Year</b>				Box Y	<b>1.21</b>

- Step 1 Categorize your product usage in Column A of the table.  
Note: Your suppliers may have a program that estimates volatile organic compounds in his products, so check with them to see if they do.
- Step 2 The release factor, Column B, for coatings is determined from the coating type. Click on the box and then the down arrow to display the choices. Varnishes applied as an overprinting coating have a 5% release factor. Water-based or UV coatings have no reduction of the VOCs released or 100% release factor. Note: Varnishes are typically in pounds so the units in Column C will automatically be listed as pounds and the VOCs are estimated using a fraction, ie 15%= 0.15. All other coatings will automatically be listed in gallons and the VOCs are estimated by pounds per gallon, ie 7 lbs/gal. The release factors comes from the EPA document : Control Techniques Guideline for Offset Lithography, November 1993.
- Step 3 Estimate the total pounds or gallons of coatings products used (use Column A as a guideline for categories) that you use on an annual basis. This can be estimated by recording what you use in an average month and then multiplying by 12 to convert to annual basis. Enter the pounds or gallons in Column C.
- Step 4 Enter the typical VOC content in pounds per gallon (for 100% Release Factor) or percent by weight (for 5% Release Factor) for the coatings products in Column D. The VOC content can be obtained from your Material Safety Data
- Step 5 The coatings emission will be calculated by multiply release factor (B), the pounds or gallons per year (C), and the VOCs (D).  $E = B \times C \times D$ .
- Step 6 Box X is the addition of Column E.  
Box Y is Box X divided by 2,000 to convert pounds to tons,  $Y = X / 2000$ .  
The totals will automatically be copied to the front sheet, Emissions Summary.

Remember : Volatile organic compounds are often hazardous air pollutants, so include an estimate of the hazardous air pollutants in the inks, fountain solutions, and cleaning solutions used at the business.

## Air Emissions

## Printer Worksheet - Fountain Solutions

Date: 11/6/2002

Company Name: ABC Company

Facility Name: West Branch

### Fountain Solution Emissions - Volatile Organic Compounds (VOCs)

Etch/Concentrate Alcohol/Substitute (A)	Volatile Organic Compounds lbs-VOC/gal (B)	Gallons Per Year (C)	Emissions Lbs-VOC Per Year (D)
Fountain Solution Concentrate	5.8	1000	5800
Fountain Solution Additive	2	200	400
<b>Total Emissions in Lbs/Year</b>		Box X	6200
<b>Total Emissions in Tons/Year</b>		Box Y	<b>3.1</b>

- Step 1 List your product usage in Column A of the table, this will make the emission estimate easier.  
Note: Your suppliers may have a program that estimates volatile organic compounds in his products, so check with them to see if they do.
- Step 2 Enter the typical VOC content for these products in Column B. Use the material safety data sheets (MSDS) for this information. No retention or release factors have been established for VOCs or HAPs in fountain solutions.
- Step 3 Estimate the total gallons of products that you use on an annual basis. Include all the chemicals you use at your business. This can be estimated by recording what you use in an average month and then multiplying by 12 to convert to annual basis. Enter the gallons in Column C.
- Step 4 Multiply the gallons per year in Column C by the pounds of VOCs per gallon that is given in Column B.  $D = B \times C$ , enter the number in Column D.
- Step 5 Add the numbers in column D and enter total in Box X. Divide Box X by 2,000 to convert pounds to tons,  $Y = X / 2000$ , enter the number in Box Y.  
The totals will automatically be copied to the front sheet, Emissions Summary.

Remember volatile organic compounds are often hazardous air pollutants, so include an estimate of the hazardous air pollutants in the paints, solvents and other chemicals used at the business.

## Air Emissions

## Printer Worksheet - Wash Solutions

Date: **11/6/2002**

Company Name: **ABC Company**

Facility Name: **West Branch**

### Wash Solutions Emissions - Volatile Organic Compounds (VOCs)

Wash Solutions (A)	Release Factor (B)	Volatile Organic Compounds lbs-VOC/gal (C)	Gallons Per Year (D)	Emissions Lbs-VOC Per Year (E)
Blanket Wash	100%	6	100	600
Roller Wash	100%	6	1000	6000
<b>Total VOC Emissions in Lbs/Year</b>			Box X	6600
<b>Total VOC Emissions in Tons/Year</b>			Box Y	<b>3.3</b>

- Step 1 Categorize your product usage in Column A of the table. Include all the chemicals you use at your business.  
Note: Your suppliers may have a program that estimates volatile organic compounds in his products, so
- Step 2 The release factor, Column B, for wash solutions is determined from the vapor pressure of the wash solution. Click on the box and then the down arrow to display the choices. If the vapor pressure is less than 10 mm Hg@20C, then you can reduce the VOC emissions for the wash solution by 50%. If the vapor pressure is more than 10 mm Hg@20C, there is no reduction of the VOCs released. This release factor is from the EPA document: Alternative Control Techniques Guideline for Offset Lithography, June 1994 (EPA 453/R-94-054).
- Step 3 Enter the typical VOC content for the products in Column C. Look on the material safety data sheets (MSDS) for this information.
- Step 4 Estimate the total gallons of products (use Column A as a guideline for categories) that you use on an annual basis. This can be estimated by recording what you use in an average month and then multiplying by 12 to convert to annual basis. Enter the gallons in Column C.
- Step 5 Multiply the gallons per year in Column C by the pounds of VOCs per gallon that is given in Column B.  $D = B \times C$ , enter the number in Column D. The VOC content per gallon of coating can be obtained from your Material Safety Data Sheets (MSDS), if the content is not listed in Column B.
- Step 6 Add the numbers in column D and enter total in Box X. Divide Box X by 2,000 to convert pounds to tons,  $Y = X / 2000$ , enter the number in Box Y.  
The totals will automatically be copied to the front sheet, Emissions Summary.

Remember : Volatile organic compounds are often hazardous air pollutants, so include an estimate of the hazardous air pollutants in the inks, fountain solutions, and cleaning solutions used at the business.

# Air Emissions

# Printer Worksheet - Hazardous Air Pollutants

Date: 11/6/2002

Company Name: ABC Company  
Facility Name: West Branch

## Hazardous Air Pollutants Emission Worksheet

Chemicals Used					Ethylene glycol		Insert HAP name		Insert HAP name	
Ink, Coatings, Fountain Solutions, Wash Solutions (A)	Release Factor (B)	Gallons Per Year (C)	Pounds Per Gallon (D)	Pounds Per Year (E)	Fraction (15%=0.15) (F)	Pounds Per Year (G)	Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year
Fountain Solution	100%	200	8	1600.00	0.3	480.00		0.00		0.00
					Sub - Total =	480.0	Sub - Total =	0.0	Sub - Total =	0.0

Grand Total = 480 pounds/year (Combined HAPs)  
0.24 tons / year

## Air Emissions

## Printer Worksheet - Hazardous Air Pollutants

### Hazardous Air Pollutants Emission Worksheet

#### Instructions

- Step 1 Enter the different products in Column A of the table; Inks, Coatings, Fountain Solutions, Cleaning Solutions. The products listed should be the same ones listed on the previous sheets, **if** they contain hazardous air pollutants.  
Note: Typically there are no HAPs in inks, check your MSDS.
- Step 2 The release factor, Column B, for the different chemicals used. The release factor used here should be the same number used on the previous sheets, see those sheets for a detailed explanation of the factors listed.
- Step 3 Estimate the total gallons of product that you use on an annual basis for each designated product category and fill in the number in Column C. The gallons per year can be estimated by recording what you use in an average month and then multiplying by 12 to convert to annual basis.
- Step 4 The pounds per gallon in Column D can be determined from your representative MSDS for the product category. If the specific gravity (S.G.) is given instead, use the following formula to calculate pounds per gallon:  $S.G. \times 8.3 \text{ lbs/gal}$ . The S.G. will be in the range of 0.8 to 1.3. For example, most solvents are less than 1.0 since they are less dense than water. Specific gravity is the density of the product compared to water weighting 8.3 lbs/gallon.
- Step 5 Multiply the gallons per year in Column C by the pounds per gallon given in Column D.  $C \times D = E$ , fill in the number in Column E.
- Step 6 Using your representative MSDS, compare all the chemicals listed on the MSDS to the list of 188 hazardous air pollutants (HAPs) list. List all the HAPs and percent by weight in the space provided in Column F. Note: Copy the HAP name from the list so you don't have to type out the chemical name. If the MSDS gives a range of 10-20% for a chemical, use the midpoint of 15%. Convert the percentage (15%) to a fraction (.15) and enter in Column F. Keep in mind that an MSDS lists many chemicals that are not HAPs.
- Step 7 To determine the pounds per year for each HAP in a product category, multiply the pounds per year in Column E by the fraction in Column F. Enter the number in the space provided in Column G.
- Step 8 Add the pounds per year for each HAP in Column G and enter the total at the bottom of the table. Enter the pounds per year for all HAPs for a Grand Total. If you have more HAPs than provided add columns for more HAPs by selecting, copy and paste.

## Air Emissions

## Printer Worksheet - Hazardous Air Pollutants

### Hazardous Air Pollutants Emission Worksheet

List of HAPS Most Common to the Lithographic Printing Industry.

From the Printers' National Environmental Assistance Center ([www.pneac.org](http://www.pneac.org))

The following list of HAPs can be found in materials used in sheet fed printing and is provided to assist in the identification of HAPs. A complete list of HAPs is included in this folder and the user needs to compare it with the MSDS chemicals.

HAP	CAS#	Product
Cumene	98-82-8	Blanket conditioner Blanket/Roller Wash
Ethyl Benzene	100-41-4	Metering Roller Cleaner Blanket/Roller Wash
Ethylene glycol	107-21-1	Fountain Solution
n-Hexane	110-54-3	Spray Adhesive
Napthalene	91-20-3	Blanket/Roller Wash
Methanol	67-56-1	Stay Open
Methyl Chloroform (1,1,1-Trichlorethane)	71-55-6	Blanket/Roller Wash
Methylene Chloride (Dichloromethane)	75-09-2	Metering Roller Cleaner Blanket/Roller Wash
Methyl Ethyl Ketone	79-34-5	UV Cleaning Solution
Toluene	108-88-3	Metering Roller Cleaner Blanket wash
Xylene	1330-20-7	Blanket Conditioner



<b>Glycol Ethers</b>	<b>CAS#</b>	<b>Product</b>
Ethylene Glycol Monobutyl Ether - also known as Butyl Cellosolve - also known as 2-Butoxyethanol	111-76-2	Fountain Solutions Blanket/Roller Wash
Ethylene Glycol Monomethyl Ether - also known as 2-Methoxyethanol	109-86-4	Fountain Solutions Blanket/Roller Wash
Ethylene Glycol Monoethyl Ether - also known as 2-Ethoxyethanol	110-80-5	Fountain Solutions Blanket/Roller Wash
Ethylene Glycol Dimethyl Ether - Also known as 1, 2-Dimethoxyethane	110-71-4	Fountain Solutions Blanket/Roller Wash
Diethylene Glycol Mon-o-Butyl Ether - Also known as Butyl Carbitol	112-34-5	Fountain Solutions Blanket/Roller Wash
Diethylene Glycol Monomethyl Ether - Also 2-(Methoxyethoxy) Ethanol	111-77-3	Fountain Solutions Blanket/Roller Wash
Diethylene glycol Monoethyl Ether - Also known as 2-(Ethoxyethoxy) Ethanol	110-90-0	Fountain Solutions Blanket/Roller Wash
Diethylene Gcol Dimethyl Ether - Also known as 2-Methoxyether Ether	111-96-6	Fountain Solutions Blanket/Roller Wash
Diethylene Glycol Diethyl Ether - Also known as 2-Ethoxyethyl Ether	112-36-7	Fountain Solutions Blanket/Roller Wash

The following chemicals are not to be included in the Glycol Ethers Category:

Diethylene Glycol	111-46-6
Propylene Glycol Methyl Ether	107-98-2
Diethylene Glycol Monomethyl Ether	34590-94-8
All Other Propylene Glycol Ethers	
Propylene Glycol Methyl Ether Acetate	108-65-6

The category of regulated "glycol ethers" is larger than those identified on this page. Further information may be obtained by contacting the RCRA/Superfund hotline at 800-424-9346 to request a copy of EPA's document entitled "Toxic Release Inventory - List of Toxic Chemicals within the Glycol Ethers Category". The publication number is EPA - 745-R-95-0006.

[illegible]

Insert HAP name		Insert HAP name		Insert HAP name		Insert HAP name		Insert HAP name	
Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year
	0.00		0.00		0.00		0.00		0.00
Sub - Total = 0.0		Sub - Total = 0.0		Sub - Total = 0.0		Sub - Total = 0.0		Sub - Total = 0.0	

## Air Emissions

## Printer Worksheet

Date: 11/6/2002

Company Name: ABC Company

Facility Name: West Branch

### Hazardous Air Pollutant List

Finding chemicals on the hazardous air pollutant list.

Chemicals often have more than one name, so the use of Chemical Abstracts Services (CAS) number is unique to each chemical. Some documents, like MSDS, do not show the dashes in the number. With or without the dashes the number should be the same.

The only chemicals on the HAPs list without a CAS Numbers are some grouped chemicals (compounds).

Locating HAPs in the HAPs chemical list: From the 'Edit' drop down menu, choose the 'Find' key. Type in a CAS number or Chemical name and click on 'Find Next'. You can type an asterisk (\*) in the 'Find What Box' to match any number of characters.

75-07-0 Acetaldehyde	63-25-2 Carbaryl	84-74-2 Dibutylphthalate
60-35-5 Acetamide	75-15-0 Carbon disulfide	106-46-7 1,4-Dichlorobenzene(p)
75-05-8 Acetonitrile	56-23-5 Carbon tetrachloride	91-94-1 3,3-Dichlorobenzidine
98-86-2 Acetophenone	463-58-1 Carbonyl sulfide	111-44-4 Dichloroethyl ether (Bis(2-chloroethyl)ether)
53-96-3 2-Acetylaminofluorene	120-80-9 Catechol	542-75-6 1,3-Dichloropropene
107-02-8 Acrolein	57-74-9 Chlordane	62-73-7 Dichlorvos
79-06-1 Acrylamide	133-90-4 Chloramben	111-42-2 Diethanolamine
79-10-7 Acrylic acid	7782-50-5 Chlorine	121-69-7 N,N-Diethyl aniline (N,N-Dimethylaniline)
107-13-1 Acrylonitrile	79-11-8 Chloroacetic acid	64-67-5 Diethyl sulfate
107-05-1 Allyl chloride	532-27-4 2-Chloroacetophenone	534-52-1 4,6-Dinitro-o-cresol, and salts
92-67-1 4-Aminobiphenyl	108-90-7 Chlorobenzene	51-28-5 2,4-Dinitrophenol
62-53-3 Aniline	510-15-6 Chlorobenzilate	121-14-2 2,4-Dinitrotoluene
90-04-0 o-Anisidine	67-66-3 Chloroform	60-11-7 Dimethyl aminoazo- benzene
Varies Antimony Compounds	126-99-8 Chloroprene	79-44-7 Dimethyl carbamoyl chloride
Varies Arsenic Compounds (inorganic including arsine)	107-30-2 Chloromethyl methyl ether	68-12-2 Dimethyl formamide
1332-21-4 Asbestos	Varies Chromium Compounds	57-14-7 1,1-Dimethyl hydrazine
	Varies Cobalt Compounds	131-11-3 Dimethyl phthalate
	Varies Coke Oven Emissions	77-78-1 Dimethyl sulfate
71-43-2 Benzene (including benzene from gasoline)	108-39-4 m-Cresol	119-90-4 3,3-Dimethoxy- benzidine
92-87-5 Benzidine	95-48-7 o-Cresol	119-93-7 3,3',-Dimethyl benzidine
98-07-7 Benzotrichloride	106-44-5 p-Cresol	123-91-1 1,4-Dioxane (1,4- Diethyleneoxide)
100-44-7 Benzyl chloride	1319-77-3 Cresols/Cresylic acid (isomers and mixture)	122-66-7 1,2-Diphenylhydrazine
Varies Beryllium Compounds	98-82-8 Cumene	
92-52-4 Biphenyl	Varies Cyanide Compounds	
542-88-1 Bis(chloromethyl)ether		
117-81-7 Bis(2-ethylhexyl) phthalate (DEHP)	94-75-7 2,4-D (2,4Dichloro- phenoxyacetic acid, including salts and esters)	
75-25-2 Bromoform	72-55-9 DDE (1,1-Dichloro-2, 2-Bis (p-Chlorophenyl) Ethylene)	
106-99-0 1,3-Butadiene		106-89-8 Epichlorohydrin (1-Chloro-2,3-epoxy propane)
Varies Cadmium Compounds	334-88-3 Diazomethane	
156-62-7 Calcium cyanamide	132-64-9 Dibenzofurans	
133-06-2 Captan	96-12-8 1,2-Dibromo-3- chloropropane	

## Hazardous Air Pollutant List

106-88-7	1,2-Epoxybutane	67-56-1	Methanol	123-38-6	Propionaldehyde
100-41-4	Ethyl benzene	72-43-5	Methoxychlor	114-26-1	Propoxur (Baygon)
51-79-6	Ethyl carbamate (Urethane)	74-83-9	Methyl bromide (Bromomethane)	75-55-8	1,2-Propylenimine (2-Methyl aziridine)
75-00-3	Ethyl chloride (Chloroethane)	74-87-3	Methyl chloride (Chloromethane)	78-87-5	Propylene dichloride (1,2-Dichloropropane)
106-93-4	Ethylene dibromide (Dibromoethane)	71-55-6	Methyl chloroform (1,1,1-Trichloroethane)	75-56-9	Propylene oxide
107-06-2	Ethylene dichloride (1,2-Dichloroethane)	78-93-3	Methyl ethyl ketone (2-Butanone)	91-22-5	Quinoline
107-21-1	Ethylene glycol	60-34-4	Methyl hydrazine	106-51-4	Quinone
151-56-4	Ethylene imine (Aziridine)	74-88-4	Methyl iodide (Iodomethane)	Varies	Radionuclides (including radon)
75-21-8	Ethylene oxide	108-10-1	Methyl isobutyl ketone (Hexone)	Varies	Selenium Compounds
96-45-7	Ethylene thiourea	624-83-9	Methyl isocyanate	96-09-3	Styrene oxide
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)	80-62-6	Methyl methacrylate	100-42-5	Styrene
Varies	Fine mineral fibers	1634-04-4	Methyl tert butyl ether		
50-00-0	Formaldehyde	101-14-4	4,4-Methylene bis(2-chloroaniline)	1746-01-6	2,3,7,8-Tetrachloro-dibenzo-p-dioxin
Varies	Glycol ethers	75-09-2	Methylene chloride (Dichloromethane)	79-34-5	1,1,2,2-Tetrachloroethane
76-44-8	Heptachlor	101-68-8	Methylene diphenyl diisocyanate (MDI)	127-18-4	Tetrachloroethylene (Perchloroethylene)
118-74-1	Hexachlorobenzene	101-77-9	4,4,-Methylenedianiline	7550-45-0	Titanium tetrachloride
87-68-3	Hexachlorobutadiene	91-20-3	Naphthalene	108-88-3	Toluene
77-47-4	Hexachlorocyclopentadiene	Varies	Nickel Compounds	95-80-7	2,4-Toluene diamine
67-72-1	Hexachloroethane	98-95-3	Nitrobenzene	584-84-9	2,4-Toluene diisocyanate
822-06-0	Hexamethylene-1,6-diisocyanate	100-02-7	4-Nitrophenol	95-53-4	o-Toluidine
680-31-9	Hexamethylphosphoramide	79-46-9	2-Nitropropane	8001-35-2	Toxaphene (chlorinated camphene)
110-54-3	Hexane	684-93-5	N-Nitroso-N-methylurea	120-82-1	1,2,4-Trichlorobenzene
302-01-2	Hydrazine	59-89-2	N-Nitrosomorpholine	79-00-5	1,1,2-Trichloroethane
7647-01-0	Hydrochloric acid (Hydrogen chloride)	62-75-9	N-Nitrosodimethylamine	79-01-6	Trichloroethylene
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)	92-93-3	4-Nitrobiphenyl	95-95-4	2,4,5-Trichlorophenol
123-31-9	Hydroquinone	56-38-2	Parathion	88-06-2	2,4,6-Trichlorophenol
78-59-1	Isophorone	82-68-8	Pentachloronitrobenzene (Quintobenzene)	121-44-8	Triethylamine
Varies	Lead Compounds	87-86-5	Pentachlorophenol	1582-09-8	Trifluralin
58-89-9	Lindane (all isomers)	108-95-2	Phenol	540-84-1	2,2,4-Trimethylpentane
108-31-6	Maleic anhydride	106-50-3	p-Phenylenediamine	108-05-4	Vinyl acetate
Varies	Manganese Compounds	75-44-5	Phosgene	75-01-4	Vinyl chloride
Varies	Mercury Compounds	7803-51-2	Phosphine	75-35-4	Vinylidene chloride (1,1-Dichloroethylene)
		7723-14-0	Phosphorus	1330-20-7	Xylenes (isomers and mixture)
		85-44-9	Phthalic anhydride	108-38-3	m-Xylenes
		1336-36-3	Polychlorinated biphenyls (Aroclors)	95-47-6	o-Xylenes
		Varies	Polycyclic Organic Matter	106-42-3	p-Xylenes
		1120-71-4	1,3-Propane sultone		
		57-57-8	beta-Propiolactone		

NOTE: For all listings above which contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure.

## Air Emissions

## Printer Worksheet - Summary (Offset Lithography)

Date:

Company Name:

Facility Name:

### Emission Summary

	Particulate Material PM10	Volatile Organic Compounds VOCs	Sulfur Dioxide SO2	Nitrogen Oxides NOx	Carbon Monoxide CO
Ink Emission					
Coatings					
Fountain Solutions					
Wash Solutions					
Stand-by Generator					
<b>Total Tons/Year</b>					

### Basic Instructions

These calculation sheets use Microsoft Excel, so you will need the Microsoft Excel program to use these spread sheets.

Typing in the cell can **delete** everything in the cell; number or text or equation, it is good practice to create a master sheet and then copy/rename a working file.

- Step 1 Fill in the company, facility name and identifying information in the shaded boxes. The information will be copied to the attached sheets (Tabs).
- Step 2 The emissions for the ink emissions, coatings, fountain solutions, and wash solutions are calculated from the **attached sheets** (the tabs at the bottom of this page), Ink Emissions, Coatings, Fountain and Wash Solutions. You enter the information on the attached sheets and the emission results for VOCs are copied by the program to this front page. Do not forget to attach all the calculation sheets to the summary when submitting the emission estimate for permitting. Also remember to include the hazardous air pollutant (HAPs) calculation. If you have other emission points add the equipment to this table, and attach the calculation. The text on the attached sheets details the calculations, the Excel program will do the calculation for you, the details are included as an explanation of how the calculation is performed so you could do the calculation manually.
- Step 3 If you have other equipment with emissions you need to calculate these emissions and add them to this sheet.
- Step 4 When you have completed all the calculations for all the emission points at the business, print out all the sheets and attach them to your submittal.  
Note: To print the whole workbook, chose the **'entire workbook'** button on the 'print what' box.

## Air Emissions

## Printer Worksheet - Ink

Date:

Company Name:

Facility Name:

### Ink Emissions - Volatile Organic Compounds (VOCs)

Ink (A)	Press Type: Non-Heatset or Heatset (B)	Release Factor (C)	Volatile Organic Compound Content Fraction(15%=0.15) (D)	Pounds per Year (E)	Emissions (lbs/year) (F)
Total VOC Emissions in Pounds/Year				Box X	
Total VOC Emissions in Tons/Year				Box Y	

- Step 1 Categorize your ink usage in Column A of the table.  
Note: Your product supplier may have a program that estimates volatile organic compounds (VOCs) in his products, so check with him to see if he does, filling out these tables will be easier. If you use supplier numbers make sure they include the release factor.
- Step 2 Enter the press type, Non-Heatset or Heatset, in Column B. Click on the box and then the down arrow to display the choices. The press type determines the release factor in Column C, the release factor is automatically assigned by the program after the press type is chosen. For non-heatset printing the release factor is 0.05, for heatset printing the release factor is 0.80. The release factor will automatically be input on to the sheet after you enter the press type. The release factors comes from the EPA document : Control Techniques Guideline for Offset Lithography, November 1993.
- Step 3 From the Material Safety Data Sheet (MSDS) input the volatile organic content (VOC) in percent by weight. Enter the fraction, 0.15 or 0.35, Column C.
- Step 4 Estimate the pounds per year of products that you use on an annual basis in Column E. This can be estimated by recording what you use in an average month and then multiplying by 12 to convert to an annual basis.
- Step 5 Emissions are equal to the Release Factor times the fraction of VOCs per pound times the Pounds per year,  $F = C \times D \times E$ , enter the number in Column F.
- Step 6 Add all the results in column F for a total in Box X. Divide the total in Box X by 2000 to convert pounds to tons per year,  $Y = X/2000$ , enter number in Box Y.  
The totals will automatically be copied to the front sheet, Emissions Summary.

Do not include exempt VOC's like Methylene Chloride, 1,1,1-Trichloroethane, Acetone, or Methyl Acetate. See the definition of "Volatile Organic Compound (VOC)" as defined in 40 CFR Subsection 51.100(s)(1).

Remember volatile organic compounds are often hazardous air pollutants, so include an estimate of the hazardous air pollutants in the ink used at the business.

## Air Emissions

## Printer Worksheet - Coatings

Date:

Company Name:

Facility Name:

### Coatings Emissions - Volatile Organic Compounds (VOCs)

Coatings (A)	Release Factor (B)	Pounds or Gallons Per Year (C)	Volatile Organic Compounds Fraction(15%=0.15) or lbs-VOC/gal (D)	Emissions Lbs-VOC Per Year (E)
Total VOC Emissions in Lbs/Year			Box X	
Total VOC Emissions in Tons/Year			Box Y	

- Step 1 Categorize your product usage in Column A of the table.  
Note: Your suppliers may have a program that estimates volatile organic compounds in his products, so check with them to see if they do.
- Step 2 The release factor, Column B, for coatings is determined from the coating type. Click on the box and then the down arrow to display the choices. Varnishes applied as an overprinting coating have a 5% release factor. Water-based or UV coatings have no reduction of the VOCs released or 100% release factor. Note: Varnishes are typically in pounds so the units in Column C will automatically be listed as pounds and the VOCs are estimated using a fraction, ie 15%= 0.15. All other coatings will automatically be listed in gallons and the VOCs are estimated by pounds per gallon, ie 7 lbs/gal. The release factors comes from the EPA document : Control Techniques Guideline for Offset Lithography, November 1993.
- Step 3 Estimate the total pounds or gallons of coatings products used (use Column A as a guideline for categories) that you use on an annual basis. This can be estimated by recording what you use in an average month and then multiplying by 12 to convert to annual basis. Enter the pounds or gallons in Column C.
- Step 4 Enter the typical VOC content in pounds per gallon for 100% or percent by weight for 5% the products in Column D. Look on the material safety data sheets (MSDS) for this information.
- Step 5 The coatings emission will be calculated by multiply release factor (B), the pounds or gallons per year (C), and the VOCs (D).  $E = B \times C \times D$ .
- Step 6 Box X is the addition of Column E.  
Box Y is Box X divided by 2,000 to convert pounds to tons,  $Y = X / 2000$ .  
The totals will automatically be copied to the front sheet, Emissions Summary.

Remember : Volatile organic compounds are often hazardous air pollutants, so include an estimate of the hazardous air pollutants in the inks, fountain solutions, and cleaning solutions used at the business.



## Air Emissions

## Printer Worksheet - Fountain Solutions

Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Facility Name: \_\_\_\_\_

### Fountain Solution Emissions - Volatile Organic Compounds (VOCs)

Etch/Concentrate Alcohol/Substitute (A)	Volatile Organic Compounds lbs-VOC/gal (B)	Gallons Per Year (C)	Emissions Lbs-VOC Per Year (D)
Total Emissions in Lbs/Year		Box X	
Total Emissions in Tons/Year		Box Y	

- Step 1 List your product usage in Column A of the table, this will make the emission estimate easier.  
Note: Your suppliers may have a program that estimates volatile organic compounds in his products, so check with them to see if they do.
- Step 2 Enter the typical VOC content for these products in Column B. Use the material safety data sheets (MSDS) for this information. No retention or release factors have been established for VOCs or HAPs in fountain solutions.
- Step 3 Estimate the total gallons of products that you use on an annual basis. Include all the chemicals you use at your business. This can be estimated by recording what you use in an average month and then multiplying by 12 to convert to annual basis. Enter the gallons in Column C.
- Step 4 Multiply the gallons per year in Column C by the pounds of VOCs per gallon that is given in Column B.  $D = B \times C$ , enter the number in Column D.
- Step 5 Add the numbers in column D and enter total in Box X. Divide Box X by 2,000 to convert pounds to tons,  $Y = X / 2000$ , enter the number in Box Y.  
The totals will automatically be copied to the front sheet, Emissions Summary.

Remember volatile organic compounds are often hazardous air pollutants, so include an estimate of the hazardous air pollutants in the paints, solvents and other chemicals used at the business.

## Air Emissions

## Printer Worksheet - Wash Solutions

Date:

Company Name:

Facility Name:

### Wash Solutions Emissions - Volatile Organic Compounds (VOCs)

Wash Solutions (A)	Release Factor (B)	Volatile Organic Compounds lbs-VOC/gal (C)	Gallons Per Year (D)	Emissions Lbs-VOC Per Year (E)
Total VOC Emissions in Lbs/Year			Box X	
Total VOC Emissions in Tons/Year			Box Y	

- Step 1 Categorize your product usage in Column A of the table. Include all the chemicals you use at your business.  
Note: Your suppliers may have a program that estimates volatile organic compounds in his products, so
- Step 2 The release factor, Column B, for wash solutions is determined from the vapor pressure of the wash solution. Click on the box and then the down arrow to display the choices. If the vapor pressure is less than 10 mm Hg@20C, then you can reduce the VOC emissions for the wash solution by 50%. If the vapor pressure is more than 10 mm Hg@20C, there is no reduction of the VOCs released. This release factor is from the EPA document: Alternative Control Techniques Guideline for Offset Lithography, June 1994 (EPA 453/R-94-054).
- Step 3 Enter the typical VOC content for the products in Column C. Look on the material safety data sheets (MSDS) for this information.
- Step 4 Estimate the total gallons of products (use Column A as a guideline for categories) that you use on an annual basis. This can be estimated by recording what you use in an average month and then multiplying by 12 to convert to annual basis. Enter the gallons in Column C.
- Step 5 Multiply the gallons per year in Column C by the pounds of VOCs per gallon that is given in Column B.  $D = B \times C$ , enter the number in Column D. The VOC content per gallon of coating can be obtained from your Material Safety Data Sheets (MSDS), if the content is not listed in Column B.
- Step 6 Add the numbers in column D and enter total in Box X. Divide Box X by 2,000 to convert pounds to tons,  $Y = X / 2000$ , enter the number in Box Y.  
The totals will automatically be copied to the front sheet, Emissions Summary.

Remember : Volatile organic compounds are often hazardous air pollutants, so include an estimate of the hazardous air pollutants in the inks, fountain solutions, and cleaning solutions used at the business.

# Air Emissions

# Printer Worksheet - Hazardous Air Pollutants

Date:

Company Name:

Facility Name:

## Hazardous Air Pollutants Emission Worksheet

Chemicals Used					Ethylene glycol		Insert HAP name		Insert HAP name	
Ink, Coatings, Fountain Solutions, Wash Solutions (A)	Release Factor (B)	Gallons Per Year (C)	Pounds Per Gallon (D)	Pounds Per Year (E)	Fraction (15%=0.15) (F)	Pounds Per Year (G)	Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year
					Sub - Total =		Sub - Total =		Sub - Total =	

<b>Grand Total =</b>	pounds/year (Combined HAPs) tons / year
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**Hazardous Air Pollutants Emission Worksheet****Instructions**

- Step 1 Enter the different products in Column A of the table; Inks, Coatings, Fountain Solutions, Cleaning Solutions. The products listed should be the same ones listed on the previous sheets, **if** they contain hazardous air pollutants.  
Note: Typically there are no HAPs in inks, check your MSDS.
- Step 2 The release factor, Column B, for the different chemicals used. The release factor used here should be the same number used on the previous sheets, see those sheets for a detailed explanation of the factors listed.
- Step 3 Estimate the total gallons of product that you use on an annual basis for each designated product category and fill in the number in Column C. The gallons per year can be estimated by recording what you use in an average month and then multiplying by 12 to convert to annual basis.
- Step 4 The pounds per gallon in Column D can be determined from your representative MSDS for the product category. If the specific gravity (S.G.) is given instead, use the following formula to calculate pounds per gallon:  $S.G. \times 8.3 \text{ lbs/gal}$ . The S.G. will be in the range of 0.8 to 1.3. For example, most solvents are less than 1.0 since they are less dense than water. Specific gravity is the density of the product compared to water weighting 8.3 lbs/gallon.
- Step 5 Multiply the gallons per year in Column C by the pounds per gallon given in Column D.  $C \times D = E$ , fill in the number in Column E.
- Step 6 Using your representative MSDS, compare all the chemicals listed on the MSDS to the list of 188 hazardous air pollutants (HAPs) list. List all the HAPs and percent by weight in the space provided in Column F. Note: Copy the HAP name from the list so you don't have to type out the chemical name. If the MSDS gives a range of 10-20% for a chemical, use the midpoint of 15%. Convert the percentage (15%) to a fraction (.15) and enter in Column F. Keep in mind that an MSDS lists many chemicals that are not HAPs.
- Step 7 To determine the pounds per year for each HAP in a product category, multiply the pounds per year in Column E by the fraction in Column F. Enter the number in the space provided in Column G.
- Step 8 Add the pounds per year for each HAP in Column G and enter the total at the bottom of the table. Enter the pounds per year for all HAPs for a Grand Total. If you have more HAPs than provided add columns for more HAPs by selecting, copy and paste.

## Air Emissions

## Printer Worksheet - Hazardous Air Pollutants

### Hazardous Air Pollutants Emission Worksheet

List of HAPS Most Common to the Lithographic Printing Industry.

From the Printers' National Environmental Assistance Center ([www.pneac.org](http://www.pneac.org))

The following list of HAPs can be found in materials used in sheet fed printing and is provided to assist in the identification of HAPs. A complete list of HAPs is included in this folder and the user needs to compare it with the MSDS chemicals.

HAP	CAS#	Product
Cumene	98-82-8	Blanket conditioner Blanket/Roller Wash
Ethyl Benzene	100-41-4	Metering Roller Cleaner Blanket/Roller Wash
Ethylene glycol	107-21-1	Fountain Solution
n-Hexane	110-54-3	Spray Adhesive
Napthalene	91-20-3	Blanket/Roller Wash
Methanol	67-56-1	Stay Open
Methyl Chloroform (1,1,1-Trichlorethane)	71-55-6	Blanket/Roller Wash
Methylene Chloride (Dichloromethane)	75-09-2	Metering Roller Cleaner Blanket/Roller Wash
Methyl Ethyl Ketone	79-34-5	UV Cleaning Solution
Toluene	108-88-3	Metering Roller Cleaner Blanket wash
Xylene	1330-20-7	Blanket Conditioner

<b>Glycol Ethers</b>	<b>CAS#</b>	<b>Product</b>
Ethylene Glycol Monobutyl Ether - also known as Butyl Cellosolve - also known as 2-Butoxyethanol	111-76-2	Fountain Solutions Blanket/Roller Wash
Ethylene Glycol Monomethyl Ether - also known as 2-Methoxyethanol	109-86-4	Fountain Solutions Blanket/Roller Wash
Ethylene Glycol Monoethyl Ether - also known as 2-Ethoxyethanol	110-80-5	Fountain Solutions Blanket/Roller Wash
Ethylene Glycol Dimethyl Ether - Also known as 1, 2-Dimethoxyethane	110-71-4	Fountain Solutions Blanket/Roller Wash
Diethylene Glycol Mon-o-Butyl Ether - Also known as Butyl Carbitol	112-34-5	Fountain Solutions Blanket/Roller Wash
Diethylene Glycol Monomethyl Ether - Also 2-(Methoxyethoxy) Ethanol	111-77-3	Fountain Solutions Blanket/Roller Wash
Diethylene glycol Monoethyl Ether - Also known as 2-(Ethoxyethoxy) Ethanol	110-90-0	Fountain Solutions Blanket/Roller Wash
Diethylene Gcol Dimethyl Ether - Also known as 2-Methoxyether Ether	111-96-6	Fountain Solutions Blanket/Roller Wash
Diethylene Glycol Diethyl Ether - Also known as 2-Ethoxyethyl Ether	112-36-7	Fountain Solutions Blanket/Roller Wash

The following chemicals are not to be included in the Glycol Ethers Category:

Diethylene Glycol	111-46-6
Propylene Glycol Methyl Ether	107-98-2
Diethylene Glycol Monomethyl Ether	34590-94-8
All Other Propylene Glycol Ethers	
Propylene Glycol Methyl Ether Acetate	108-65-6

The category of regulated "glycol ethers" is larger than those identified on this page. Further information may be obtained by contacting the RCRA/Superfund hotline at 800-424-9346 to request a copy of EPA's document entitled "Toxic Release Inventory - List of Toxic Chemicals within the Glycol Ethers Category". The publication number is EPA - 745-R-95-0006.

[illegible]

Insert HAP name		Insert HAP name		Insert HAP name		Insert HAP name		Insert HAP name	
Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year	Fraction (15%=0.15)	Pounds Per Year
Sub - Total =		Sub - Total =		Sub - Total =		Sub - Total =		Sub - Total =	



## Air Emissions

## Printer Worksheet

Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Facility Name: \_\_\_\_\_

### Hazardous Air Pollutant List

Finding chemicals on the hazardous air pollutant list.

Chemicals often have more than one name, so the use of Chemical Abstracts Services (CAS) number is unique to each chemical. Some documents, like MSDS, do not show the dashes in the number. With or without the dashes the number should be the same.

The only chemicals on the HAPs list without a CAS Numbers are some grouped chemicals (compounds).

Locating HAPs in the HAPs chemical list: From the 'Edit' drop down menu, choose the 'Find' key. Type in a CAS number or Chemical name and click on 'Find Next'. You can type an asterisk (\*) in the 'Find What Box' to match any number of characters.

75-07-0	Acetaldehyde	63-25-2	Carbaryl	84-74-2	Dibutylphthalate
60-35-5	Acetamide	75-15-0	Carbon disulfide	106-46-7	1,4-Dichlorobenzene(p)
75-05-8	Acetonitrile	56-23-5	Carbon tetrachloride	91-94-1	3,3-Dichlorobenzidene
98-86-2	Acetophenone	463-58-1	Carbonyl sulfide	111-44-4	Dichloroethyl ether (Bis(2-chloroethyl)ether)
53-96-3	2-Acetylaminofluorene	120-80-9	Catechol	542-75-6	1,3-Dichloropropene
107-02-8	Acrolein	57-74-9	Chlordane	62-73-7	Dichlorvos
79-06-1	Acrylamide	133-90-4	Chloramben	111-42-2	Diethanolamine
79-10-7	Acrylic acid	7782-50-5	Chlorine	121-69-7	N,N-Diethyl aniline (N,N-Dimethylaniline)
107-13-1	Acrylonitrile	79-11-8	Chloroacetic acid	64-67-5	Diethyl sulfate
107-05-1	Allyl chloride	532-27-4	2-Chloroacetophenone	534-52-1	4,6-Dinitro-o-cresol, and salts
92-67-1	4-Aminobiphenyl	108-90-7	Chlorobenzene	51-28-5	2,4-Dinitrophenol
62-53-3	Aniline	510-15-6	Chlorobenzilate	121-14-2	2,4-Dinitrotoluene
90-04-0	o-Anisidine	67-66-3	Chloroform	60-11-7	Dimethyl aminoazo- benzene
Varies	Antimony Compounds	126-99-8	Chloroprene	79-44-7	Dimethyl carbamoyl chloride
Varies	Arsenic Compounds (inorganic including arsine)	107-30-2	Chloromethyl methyl ether	68-12-2	Dimethyl formamide
1332-21-4	Asbestos	Varies	Chromium Compounds	57-14-7	1,1-Dimethyl hydrazine
		Varies	Cobalt Compounds	131-11-3	Dimethyl phthalate
		Varies	Coke Oven Emissions	77-78-1	Dimethyl sulfate
71-43-2	Benzene (including benzene from gasoline)	108-39-4	m-Cresol	119-90-4	3,3-Dimethoxy- benzidine
92-87-5	Benzidine	95-48-7	o-Cresol	119-93-7	3,3',-Dimethyl benzidine
98-07-7	Benzotrichloride	106-44-5	p-Cresol	123-91-1	1,4-Dioxane (1,4- Diethyleneoxide)
100-44-7	Benzyl chloride	1319-77-3	Cresols/Cresylic acid (isomers and mixture)	122-66-7	1,2-Diphenylhydrazine
Varies	Beryllium Compounds	98-82-8	Cumene	106-89-8	Epichlorohydrin (1-Chloro-2,3-epoxy propane)
92-52-4	Biphenyl	Varies	Cyanide Compounds		
542-88-1	Bis(chloromethyl)ether	94-75-7	2,4-D (2,4Dichloro- phenoxyacetic acid, including salts and esters)		
117-81-7	Bis(2-ethylhexyl) phthalate (DEHP)	72-55-9	DDE (1,1-Dichloro-2, 2-Bis (p-Chlorophenyl) Ethylene)		
75-25-2	Bromoform	334-88-3	Diazomethane		
106-99-0	1,3-Butadiene	132-64-9	Dibenzofurans		
Varies	Cadmium Compounds	96-12-8	1,2-Dibromo-3- chloropropane		
156-62-7	Calcium cyanamide				
133-06-2	Captan				

## Hazardous Air Pollutant List

106-88-7	1,2-Epoxybutane	67-56-1	Methanol	123-38-6	Propionaldehyde
100-41-4	Ethyl benzene	72-43-5	Methoxychlor	114-26-1	Propoxur (Baygon)
51-79-6	Ethyl carbamate (Urethane)	74-83-9	Methyl bromide (Bromomethane)	75-55-8	1,2-Propylenimine (2-Methyl aziridine)
75-00-3	Ethyl chloride (Chloroethane)	74-87-3	Methyl chloride (Chloromethane)	78-87-5	Propylene dichloride (1,2-Dichloropropane)
106-93-4	Ethylene dibromide (Dibromoethane)	71-55-6	Methyl chloroform (1,1,1-Trichloroethane)	75-56-9	Propylene oxide
107-06-2	Ethylene dichloride (1,2-Dichloroethane)	78-93-3	Methyl ethyl ketone (2-Butanone)	91-22-5	Quinoline
107-21-1	Ethylene glycol	60-34-4	Methyl hydrazine	106-51-4	Quinone
151-56-4	Ethylene imine (Aziridine)	74-88-4	Methyl iodide (Iodomethane)	Varies	Radionuclides (including radon)
75-21-8	Ethylene oxide	108-10-1	Methyl isobutyl ketone (Hexone)	Varies	Selenium Compounds
96-45-7	Ethylene thiourea	624-83-9	Methyl isocyanate	96-09-3	Styrene oxide
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)	80-62-6	Methyl methacrylate	100-42-5	Styrene
Varies	Fine mineral fibers	1634-04-4	Methyl tert butyl ether		
50-00-0	Formaldehyde	101-14-4	4,4-Methylene bis(2-chloroaniline)	1746-01-6	2,3,7,8-Tetrachloro-dibenzo-p-dioxin
Varies	Glycol ethers	75-09-2	Methylene chloride (Dichloromethane)	79-34-5	1,1,2,2-Tetrachloroethane
76-44-8	Heptachlor	101-68-8	Methylene diphenyl diisocyanate (MDI)	127-18-4	Tetrachloroethylene (Perchloroethylene)
118-74-1	Hexachlorobenzene	101-77-9	4,4,-Methylenedianiline	7550-45-0	Titanium tetrachloride
87-68-3	Hexachlorobutadiene	91-20-3	Naphthalene	108-88-3	Toluene
77-47-4	Hexachlorocyclopentadiene	Varies	Nickel Compounds	95-80-7	2,4-Toluene diamine
67-72-1	Hexachloroethane	98-95-3	Nitrobenzene	584-84-9	2,4-Toluene diisocyanate
822-06-0	Hexamethylene-1,6-diisocyanate	100-02-7	4-Nitrophenol	95-53-4	o-Toluidine
680-31-9	Hexamethylphosphoramide	79-46-9	2-Nitropropane	8001-35-2	Toxaphene (chlorinated camphene)
110-54-3	Hexane	684-93-5	N-Nitroso-N-methylurea	120-82-1	1,2,4-Trichlorobenzene
302-01-2	Hydrazine	59-89-2	N-Nitrosomorpholine	79-00-5	1,1,2-Trichloroethane
7647-01-0	Hydrochloric acid (Hydrogen chloride)	62-75-9	N-Nitrosodimethylamine	79-01-6	Trichloroethylene
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)	92-93-3	4-Nitrobiphenyl	95-95-4	2,4,5-Trichlorophenol
123-31-9	Hydroquinone	56-38-2	Parathion	88-06-2	2,4,6-Trichlorophenol
78-59-1	Isophorone	82-68-8	Pentachloronitrobenzene (Quintobenzene)	121-44-8	Triethylamine
Varies	Lead Compounds	87-86-5	Pentachlorophenol	1582-09-8	Trifluralin
58-89-9	Lindane (all isomers)	108-95-2	Phenol	540-84-1	2,2,4-Trimethylpentane
108-31-6	Maleic anhydride	106-50-3	p-Phenylenediamine	108-05-4	Vinyl acetate
Varies	Manganese Compounds	75-44-5	Phosgene	75-01-4	Vinyl chloride
Varies	Mercury Compounds	7803-51-2	Phosphine	75-35-4	Vinylidene chloride (1,1-Dichloroethylene)
		7723-14-0	Phosphorus	1330-20-7	Xylenes (isomers and mixture)
		85-44-9	Phthalic anhydride	108-38-3	m-Xylenes
		1336-36-3	Polychlorinated biphenyls (Aroclors)	95-47-6	o-Xylenes
		Varies	Polycyclic Organic Matter	106-42-3	p-Xylenes
		1120-71-4	1,3-Propane sultone		
		57-57-8	beta-Propiolactone		

NOTE: For all listings above which contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure.